

## CLAIMS

We claim:

- [c1] 1. A system providing access points to a communication network, the system comprising:
- a first radio node for providing a device with access to the communication network, wherein the radio node has a first set of access point components;
  - a second radio node for providing a device with access to the communication network, wherein the second radio node has a second set of access point components;
  - a controller node coupled to the first radio node and the second radio node via a communication link, wherein the controller node has a third set of access point components complementary to the first and second set of access point components; and
  - a system controller for controlling the first and second radio nodes, wherein the system controller is configured using a physically distributed hosting function incorporated into at least one of the first radio node, the second radio node, and the controller node, and wherein the system controller is logically centralized.
- [c2] 2. The system of Claim 1 wherein the first set of access point components and the second set of access point components both include only a radio component, and wherein the third set of access point components includes a physical layer component, a medium access control (MAC) layer component, and an access point (AP) software component.
- [c3] 3. The system of Claim 1 wherein the first set of access point components and the second set of access point components both include only a radio component and a physical layer component, and wherein the third set

of access point components includes a medium access control (MAC) layer component, and an access point (AP) software layer component.

- [c4] 4. The system of Claim 1 wherein the first set of access point components and the second set of access point components both include only a radio component, a physical layer component, and a medium access control (MAC) layer component, and wherein the third set of components includes only an access point (AP) software layer component.
- [c5] 5. The system of Claim 1 wherein the first set of access point components is different than the second set of access point components.
- [c6] 6. The system of Claim 1 wherein the communication link is a wireless link.
- [c7] 7. The system of Claim 1 wherein the communication link is a Bluetooth link.
- [c8] 8. The system of Claim 1 wherein the communication link is an IEEE 802.11 link.
- [c9] 9. The system of Claim 1 wherein the communication link is a wired link.
- [c10] 10. A method for distributing access point components in a data communication network, the method comprising:  
grouping a first set of access point components in each of multiple radio node components;  
grouping a second set of access point components in at least one controller node component; and  
connecting the radio node components and the at least one controller node component via a communication link.

- [c11] 11. The method of Claim 10 wherein the first set of access point components includes only a radio component, and wherein the second set of access point components includes a physical layer component, a medium access control (MAC) layer component, and an access point (AP) software layer component.
- [c12] 12. The method of Claim 10 wherein the first set of access point components includes only a radio component and a physical layer component, and wherein the second set of access point components includes a medium access control layer (MAC) component, and an access point (AP) software layer component.
- [c13] 13. The method of Claim 10 wherein the first set of access point components includes a radio component, a physical layer component, and a medium access control (MAC) layer component, and wherein the second set of access point components includes only an access point (AP) layer software component.
- [c14] 14. A system providing access to a communication network, the system comprising:
- an access point radio node comprising a first set of access point components;
  - an access point controller node in communication with the access point radio node, wherein the access point controller node comprises a second set of access point components distinct from the first set of access point components, wherein the access point controller node is physically separated from the access point radio node;
  - a system controller for controlling at least one of the access point radio node and the access point controller node; and
  - a communication link for connecting the access point radio node, the access point controller node, and the system controller.

- [c15] 15. The system of claim 14 wherein the system controller is implemented in a physical switch.
- [c16] 16. The system of claim 14 wherein the system controller is implemented in a physically distributed hosting function incorporated into at least one of the access point radio node and the access point controller node, and wherein the system controller is logically centralized.
- [c17] 17. The system of claim 14 wherein the access point radio node further comprises a remote link driver configured to extend a bus between a baseband access point component in the access point controller node and a radio access point component in the access point radio node.
- [c18] 18. The system of claim 14 wherein the access point radio node further comprises a remote link driver configured to carry a digitized radio frequency baseband signal through a tunnel for transport to the access point controller node via the communication link.
- [c19] 19. A computer-readable medium whose contents control providing access to a communication network via an access point system comprising:  
multiple radio nodes each comprising a first set of access point layers;  
an access point controller in communication with the multiple radio nodes, wherein the access point controller comprises a second set of access point layers distinct from the first set of access point layers, wherein the access point controller is physically separated from at least some of the multiple radio nodes; and  
a communication link for connecting the each of the radio nodes to the access point controller.
- [c20] 20. The computer-readable medium of claim 19 wherein the computer-readable medium is contained in a physical switch, and wherein the

physical switch is distinct from the multiple radio nodes and the access point controller.

[c21] 21. The computer-readable medium of claim 19 wherein the system controller is contained in a physically distributed hosting function incorporated into at least one of the access point controller and the multiple radio nodes.

[c22] 22. The computer-readable medium of claim 19 wherein the computer-readable medium is a logical node in a computer network receiving the contents.

[c23] 23. The computer-readable medium of claim 19 wherein the computer-readable medium is a computer-readable disk.

[c24] 24. The computer-readable medium of claim 19 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

[c25] 25. The computer-readable medium of claim 19 wherein the computer-readable medium is a memory of a computer system.